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IS 15234 (2002): Penconazole, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

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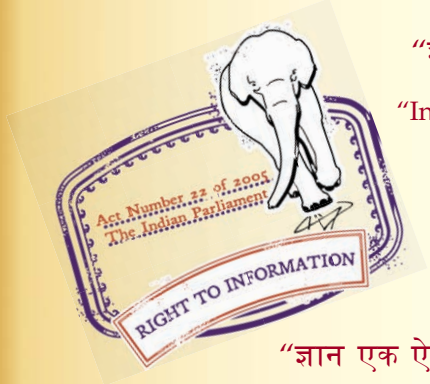

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"Knowledge is such a treasure which cannot be stolen"

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भारतीय मानक

# पेनकोनेजोल, तकनीकी — विशिष्टि

*Indian Standard*

# PENCONAZOLE, TECHNICAL — SPECIFICATION

ICS 65.100.30

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

*October* 2002

**Price Group 2**

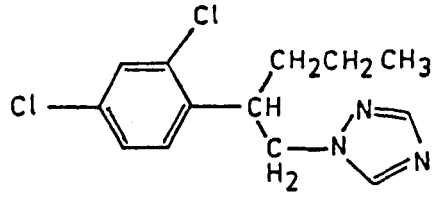
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Division Council.

Penconazole, technical is employed in the preparation of fungicidal formulations for agricultural use.

Penconazole is the common name accepted by the International Organization for Standardization (ISO) for 1-[2-(2,4-dichlorophenyl)-1H-1,2,4 triazole.

The empirical formula, structural formula and the molecular mass are as given below:

| *Empirical Formula* | *Structural Formula* | *Molecular Mass* |
|---|---|---|
| $C_{13}H_{15}Cl_2N_3$ |  | 284.2 |



In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act*, 1968 and the Rules framed thereunder. However this standard is subject to the restrictions imposed under the Act and Rules, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

# PENCONAZOLE, TECHNICAL – SPECIFICATION

## 1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for penconazole, technical.

## 2 REFERENCES

The following Indian Standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

| *IS No.* | *Title* |
|---|---|
| 1070:1992 | Reagent grade water (*third revision*) |
| 2552:1989 | Steel drums (galvanized and ungalvanized) (*third revision*) |
| 6940:1982 | Methods of test for pesticides and their formulations (*first revision*) |
| 8190 (Part 1): 1988 | Requirements for packing of pesticides : Part 1 Solid pesticides (*second revision*) |
| 10946:1996 | Methods of sampling for technical grade pesticides (*first revision*) |

## 3 REQUIREMENTS

### 3.1 Description

The material shall be in the form of a crystalline powder, white to off-white in colour, free from extraneous impurities or added modifying agents.

**3.2** The material shall also comply with the requirements given in Table 1.

## 4 PACKING

The material shall be packed in MS drums suitably lacquered from inside having pack sizes of 220 kg. MS drums shall conform to IS 2552. The general requirements as given in IS 8190 (Part 1) shall also be followed.

**Table 1 Requirements for Penconazole, Technical**
(*Clause* 3.2)

| Sl No. | Characteristic | Requirement | Method of Test, Ref to | |
|---|---|---|---|---|
| | | | Annex of this Standard | Cl No. of IS 6940 |
| (1) | (2) | (3) | (4) | (5) |
| i) | Penconazole content, percent by mass, *Min* | 95.0 | A | – |
| ii) | Moisture content, percent by mass, *Max* | 0.30 | – | 4 |
| iii) | Material insoluble in acetone, percent by mass, *Max* | 0.15 | – | 9 |
| iv) | Acidity (as $H_2SO_4$), percent by mass, *Max* | 0.40 | – | 11.3.2 |

## 5 MARKING

**5.1** The containers shall bear legibly and indelibly the following information in addition to any other information as required under the *Insecticides Act,* 1968 and Rules framed thereunder:

a) Name of the material;
b) Name and address of the manufacturer;
c) Batch number;
d) Date of manufacture;
e) Date of expiry;
f) Net mass of contents;
g) Nominal Penconazole content, percent (*m/m*); and
h) A cautionary notice as worded in the *Insecticides Act,* 1968 and Rules framed thereunder; and any other information required under the *Standards of Weights and Measures (Packaged Commodities) Rules,* 1977.

### 5.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

**5.2.1** The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act,* 1986

and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 6 SAMPLING

Representative samples of the material shall be drawn according to IS 10946.

## 7 TESTS

7.1 Tests shall be carried out by the methods referred in col 4 and 5 of Table 1.

### 7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE—'Pure chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

# ANNEX A

[*Table* 1, *Sl No.* (i)]

## DETERMINATION OF PENCONAZOLE CONTENT

### A-1 PRINCIPLE

The Penconazole content is determined by gas chromatography using internal standard technique.

### A-2 APPARATUS

**A-2.1** Gas chromatograph (GLC) equipped with FID and coupled to a printer-plotter-*cum*-integrator is used for this determination. The operating conditions suggested below are typical, which can be changed provided standardization is done:

| | | | |
|---|---|---|---|
| *Column* | : | Glass/S.S, length = 1.8 m, ID = 2 mm, packed with 3% Silicon OV - 210 on gas Chrom Q, 80 - 100 mesh. | |
| *Temperature* | : | Column oven | : 175°C |
| | | Injector | : 220°C |
| | | Detector | : 270°C |
| *Carrier Gas* | : | Nitrogen | 30 ml/min |
| | | Hydrogen | 30 ml/min |
| | | Air | 300 ml/min |

**A-2.2 Microlitre Syringe** – 5/10 µl capacity.

**A-2.3 Standard Glassware**

**A-2.4 Retention Time (Guide Values):**

| | | |
|---|---|---|
| Penconazole | : | 9.1 min |
| Benzoic acid 2- napthyl ester | : | 16.1 min |
| Total run time | : | 22 min |

### A-3 REAGENTS

**A-3.1 Dichloromethane** AR grade — or equivalent.

**A-3.2 Internal Standard** — Benzoic acid 2- napthyl ester AR grade or equivalent.

**A-3.3 Penconazole Reference Standard** — of known purity.

### A-4 PROCEDURE

**A-4.1 Preparation of Internal Standard Solution**

Weigh out accurately 1.0 g of benzoic acid 2- napthyl ester into a 250-ml volumetric flask. Dissolve in dichloromethane and make up the volume up to the mark with dichloromethane. Shake well to homogenize.

**A-4.2 Preparation of Standard Solution**

Weigh out accurately about 0.12 g of Penconazole reference standard of known purity into a 25-ml volumetric flask. Add 20 ml of the internal standard solution and make up the volume up to the mark with dichloromethane. Shake well to homogenize.

**A-4.3 Preparation of Sample Solution**

Weigh out accurately quantity of a sample equivalent to about 0.12 g of penconazole into a 25-ml volumetric flask. Add 20 ml of internal standard solution and make up the volume up to the mark with dichloromethane. Shake well to homogenize.

### A-4.4 Estimation

**A-4.4.1** Inject 1 µl standard solution until the internal standard / reference substance area quotations of two successive chromatograms do not deviate from each other by more than 2 percent.

Then use the following injection sequence:

$$.....C\,S_1\,S_1C\,S_2\,S_2\,C\,S_3.....$$

where

$C$ = Standard solution, and
$S$ = Sample solution ( 1,2,....., $n$).

From the chromatograms of the standard solution and sample solution. Measure the peak areas of the internal standard and Penconazole peaks and compute the percentage of the penconazole as given in **A-5**.

### A-5 CALCULATIONS

$$\text{Penconazole content, percent } m/m = \frac{M_1 \times A_3 \times A_2 \times P}{M_2 \times A_4 \times A_1}$$

where

$M_1$ = mass in g of standard penconazole in standard solution,

$A_3$ = peak area of internal standard in the chromatogram of standard solution,

$A_2$ = peak area of penconazole in the chromatogram of sample solution,

$P$ = percent purity of penconazole standard,

$M_2$ = mass in g of sample taken for test,

$A_4$ = peak area of internal standard in the chromatogram of sample solution, and

$A_1$ = peak area of penconazole in the chromatogram of standard solution.

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This Indian Standard has been developed from Doc: No. FAD 1 (1128).

**Amendments Issued Since Publication**

| Amend No. | Date of Issue | Text Affected |
|---|---|---|
| | | |
| | | |
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